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INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

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COUNTRY USSR (Kaluga Oblast)

PROCESSING COPY REPORT

SUBJECT 1. Details and Description of the Atomic Power Plant at Obninskoye
2. Interior Scenes of the Power Plant

DATE DISTR. 31 August 1956

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This is UNEVALUATED

SOURCE EVALUATIONS ARE DEFINITIVE INFORMATION ANALYSIS OF CONTENT IS TENTATIVE

1. The name "Smolensk Atomic Power Station"¹ was a misnomer since the establishment was not located in Smolensk. From Moscow it was reached by a drive of 80 kilometers along the road leading toward Minsk via Smolensk, then a drive to the south for 27 - 30 kilometers, and finally a drive to the west for 5 kilometers. The power plant was located in a small village², the name of which was not determined. The establishment was without a doubt the installation known as the "Smolensk Atomic Power Station".³
2. The guides at the power plant stated that there were no other atomic power plants in the USSR, although a new 2.5 million kilowatt atomic power plant was being planned which should prove to be more advantageous economically than a coal-powered plant, but less economical than a water-powered plant.
3. The power plant, which developed 5000 kilowatts, was experimental in nature, according to the guides. This power was distributed for use in the immediate vicinity. The cost of operation was reported to be greater than water- or coal-powered plants.
4. The "heart" of the power plant was a reactor. Its framework was cylindrical in shape, and had a diameter of 1,500 mm and a height of 1700 mm. According to the guide, it was made of graphite (sic). It contained 28 longitudinally drilled holes, each 2-3 inches in diameter. The reactor was surrounded by a water layer (primary water), 1 meter in thickness, and the reactor and water was enclosed in a concrete protective layer 3 meters in thickness (the protective layer probably had other materials which hindered the spread of radiation). The foundation pit of the reactor was covered by a layer of cast iron, concrete, and graphite (sic) 5.5 meters in thickness. At least the top layer was cast iron with hooks imbedded for transportation purposes.
5. The wall of the reactor hall contained a row of 28 metal rods.⁴ They were 8 meters in length and 2-3 inches in diameter (the same as the 28 drilled holes in the reactor). The uranium was placed at the lower end of the rods, 1700 mm from the end (at the same point as the height of the reactor's graphite part (sic)). It was enclosed in 2 or 3 tubes of a diameter of 10-12 mm inside the rods. In addition, it appeared that the rods contained water tubes for cooling purposes. The rods, although "loaded", were not dangerous to approach. The reactor would function when the "loaded" rods

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(Note: Washington distribution indicated by "X"; Field distribution by "#".)

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were lowered into the drilled holes in the reactor, and the amount of energy created would increase when the rods were lowered deeper into the holes. The maximum power was created when the 1700 mm "loaded" ends of the rods were fully inserted into the reactor. The operating temperature of the reactor was 260-290 degrees centigrade, and the primary water reached a temperature of 90° C. after the first revolution. When the temperature was 260-290° C., the pressure of the primary water was 100 atmospheres, but it did not vaporize because it was in an enclosed space. Eight of the rods were automatically variable, and the others could be raised and lowered by pushing a button in the control room according to the reading of the warning lamps on the meter. One loading of a row of rods (28 rods) required 25 kilograms of uranium and the consumption was probably not known by the operators themselves, since the estimates of the length of time a series of rods operated ranged from 6 to 12 months. Fuel used consisted of a mixture of U-238 and U-235 in a proportion of 95:5. (The source could not remember whether the proportion was this or the opposite, but said that apparently it was as above). The heated primary water caused the secondary water to vaporize. It was learned that the steam operated a turbine in the building situated at right angles to the building housing the reactor, and that the turbine operated an electric generator. The guides stated that they were very normal types and not of interest.

6. Located behind the rear wall⁷, the wall on which the rods were located, were various pumps, among them the ones which caused the primary water to circulate. As a precaution against radiation, the control room contained meters which indicated the amount of radiation at 263 different points in the power station and machinery. Personnel carried a radiation meter in the shape of a fountain pen and also pieces of film sensitive to radiation for their protection. The establishment had a special room in which a physician examined personnel at specified intervals. The maximum amount of radiation which a person could assimilate was 200 curie in a four-day period. Personnel worked a six-hour day.
7. When the uranium in the rods mentioned above was consumed, they were lifted out with a remote control apparatus. This equipment was operated from a booth in one corner of the reactor hall. The used rods were lowered into water wells⁸ to "cool off" for one year. Following this, the upper part would be melted again, but the 1700 mm lower portion would be placed in a "safety warehouse". As a by-product of the establishment, various isotopes useful in industry and science were developed.
8. On the surface, the establishment did not look like a power plant. It looked more like a two-story, brick, cream colored school building. There were no barbed wire or other protective fences nor was any special guard activity in evidence. Two military personnel who examined passes were stationed in the entrance hall.

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 Comments:

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1. The "Smolensk Atomic Power Station" is probably the atomic power plant located at Obninskoye (N 55-05, E 36-35). sketch on page 3.

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2. This is probably Maloyaroslavets.

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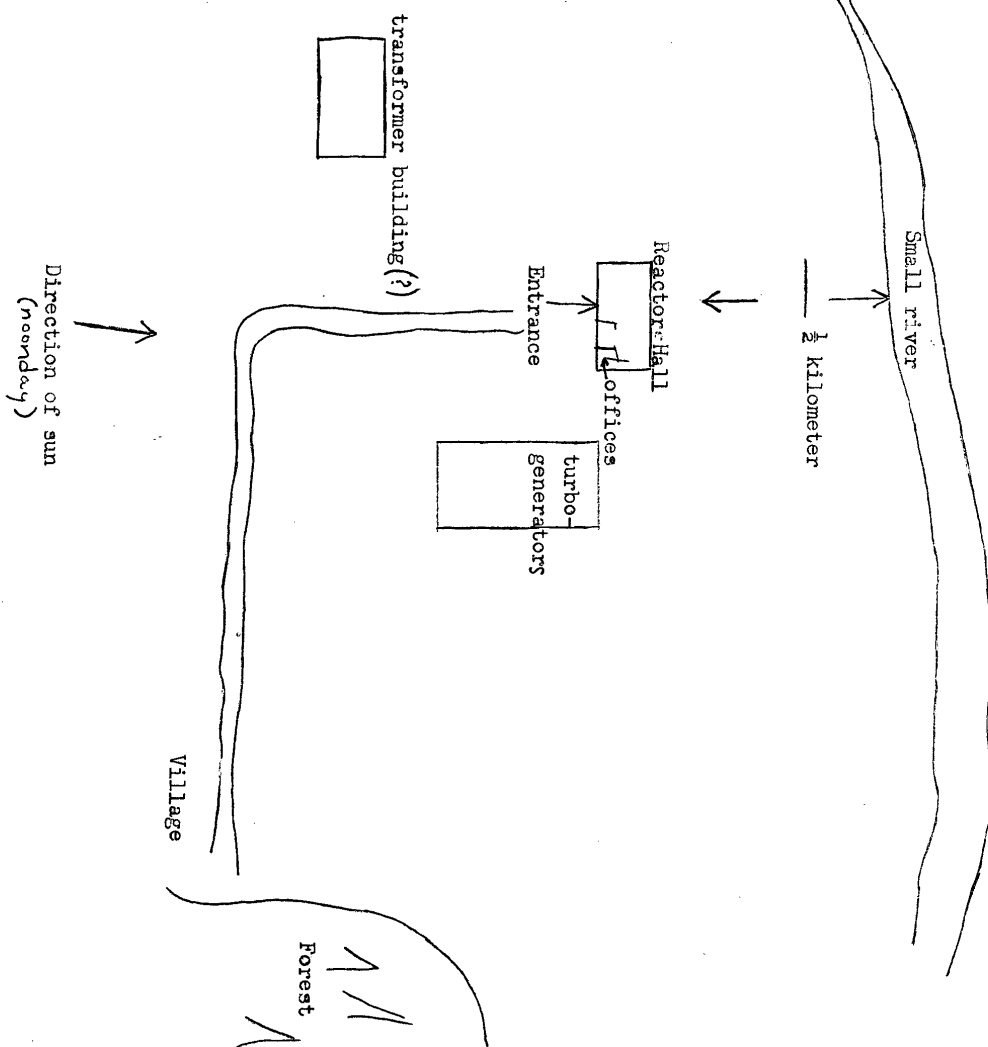
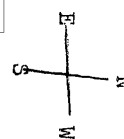
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